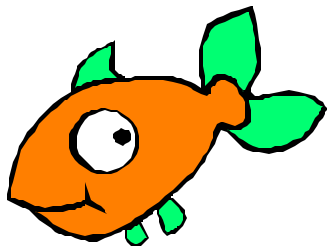
CONTAMINANT ASSESSMENT & REDUCTION PROJECT (CARP)

- What is the relative importance of specific loadings (discharges) of toxic contaminants to the quality of dredged material in the harbor today?

- What management actions to reduce contamination will produce the greatest overall benefits, both in time and area extent?



NJ TOXICS REDUCTION WORKPLAN TEAM

NJ Department of Environmental Protection

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NJ Department of Transportation

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US Geological Survey - NJ

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THE NEW JERSEY TOXICS REDUCTION WORKPLAN FOR NY-NJ HARBOR

PROJECT OVERVIEW

Joel A. Pecchioli
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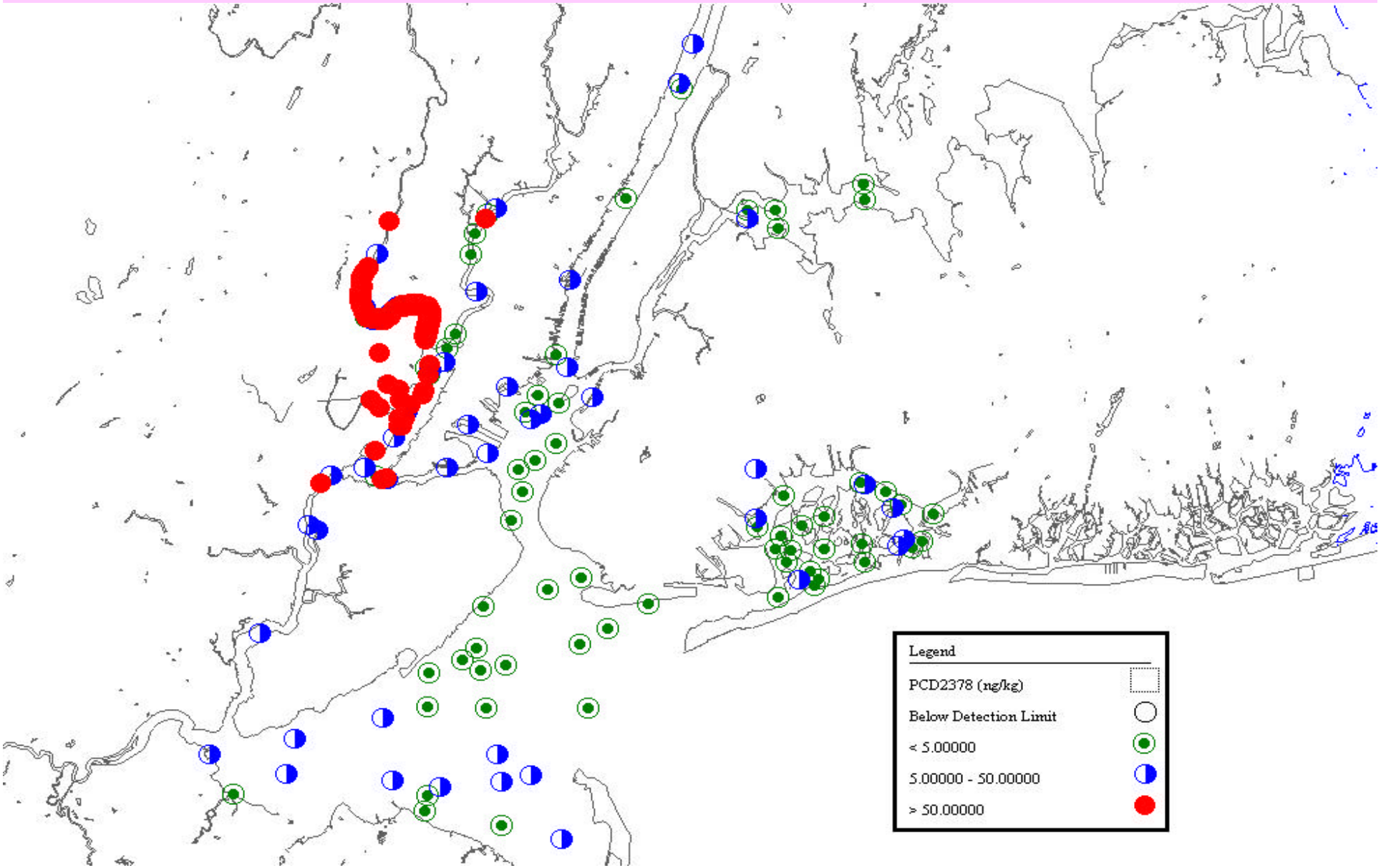
PROBLEM: Contaminated Dredged Material
Limited Management Options

2,3,7,8-TCDD in Surface Sediments



THE NEW JERSEY TOXICS REDUCTION WORKPLAN FOR NY-NJ HARBOR

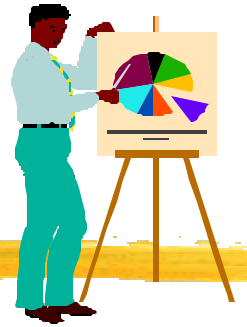
- $9.5 million in funding from Port Authority of NY-NJ via New Jersey Maritime Resources (NJDOT)
- Coordinated with NYSDEC component of NY-NJ HEP Contaminant Assessment and Reduction Program (CARP)
- NJDEP Project Management: Division of Science, Research & Technology

GOAL & OBJECTIVES OF THE NJ WORKPLAN

- GOAL: to understand the sources, transport, and fate of sediments and toxic contaminants in NY-NJ Harbor.

- OBJECTIVES:
  - To quantify the levels and loadings of the contaminants of concern in New York-New Jersey Harbor estuary.
  - To identify and track down significant sources of these contaminants.

OUTCOMES OF THE NJ WORKPLAN

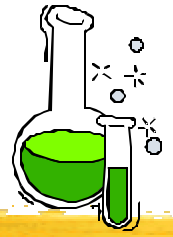


- More dredged material management options will be available over time as contamination in the estuary is reduced.

- NY-NJ Harbor Dredged Material Management Plan

- Overall improvement in the Harbor's water quality and natural resources.

CONTAMINANTS OF CONCERN



- Dioxins/Furans (17)
- PCB Congeners (114)
- Pesticides (27)
- PAHs (28)

- Metals: Total Hg, Cd, Pb
  Dissolved Hg, Cd, Pb
  Dissolved (& Total) methyl-Hg

- Based on NY-NJ HEP List

MAIN COMPONENTS OF THE NJ WORKPLAN

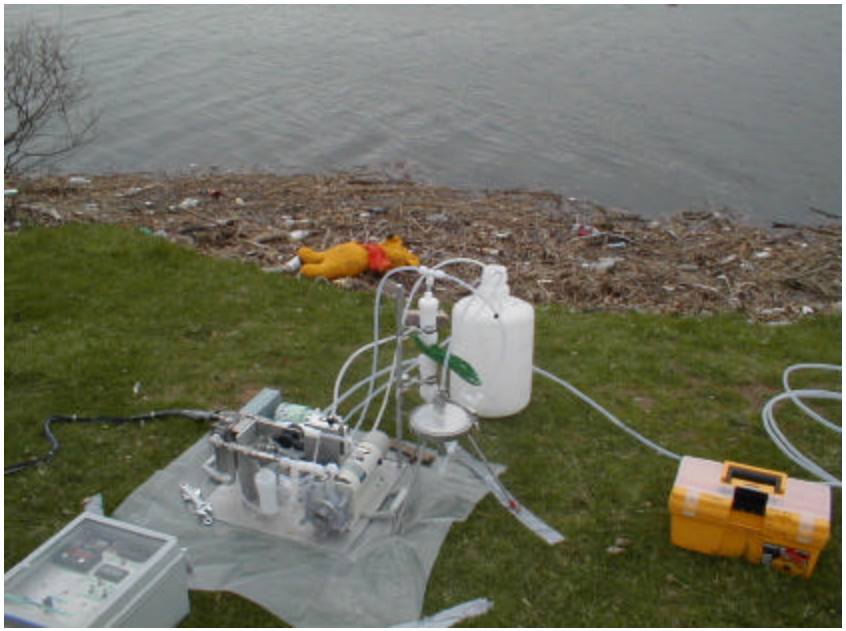
- PHASE ONE:
  - hydrodynamic surveys
  - ambient surface water quality sampling
  - POTW, CSO, and SWO sampling
- PHASE TWO: focused sampling of selected Phase I areas
- PHASE THREE: trackdown activities
  other point and non-point sources, sediments
- PHASE FOUR: modeling activities

Hydrodynamic Surveys

AMBIENT SAMPLNG PROBLEMS & SOLUTIONS: “False Negatives”

- Problem: Contaminants of Concern are present in source discharges and ambient waters at very low concentrations.

- Solutions: Use high volume water samplers (TOPS) & high-resolution analytical methods (HRGC/HRMS)



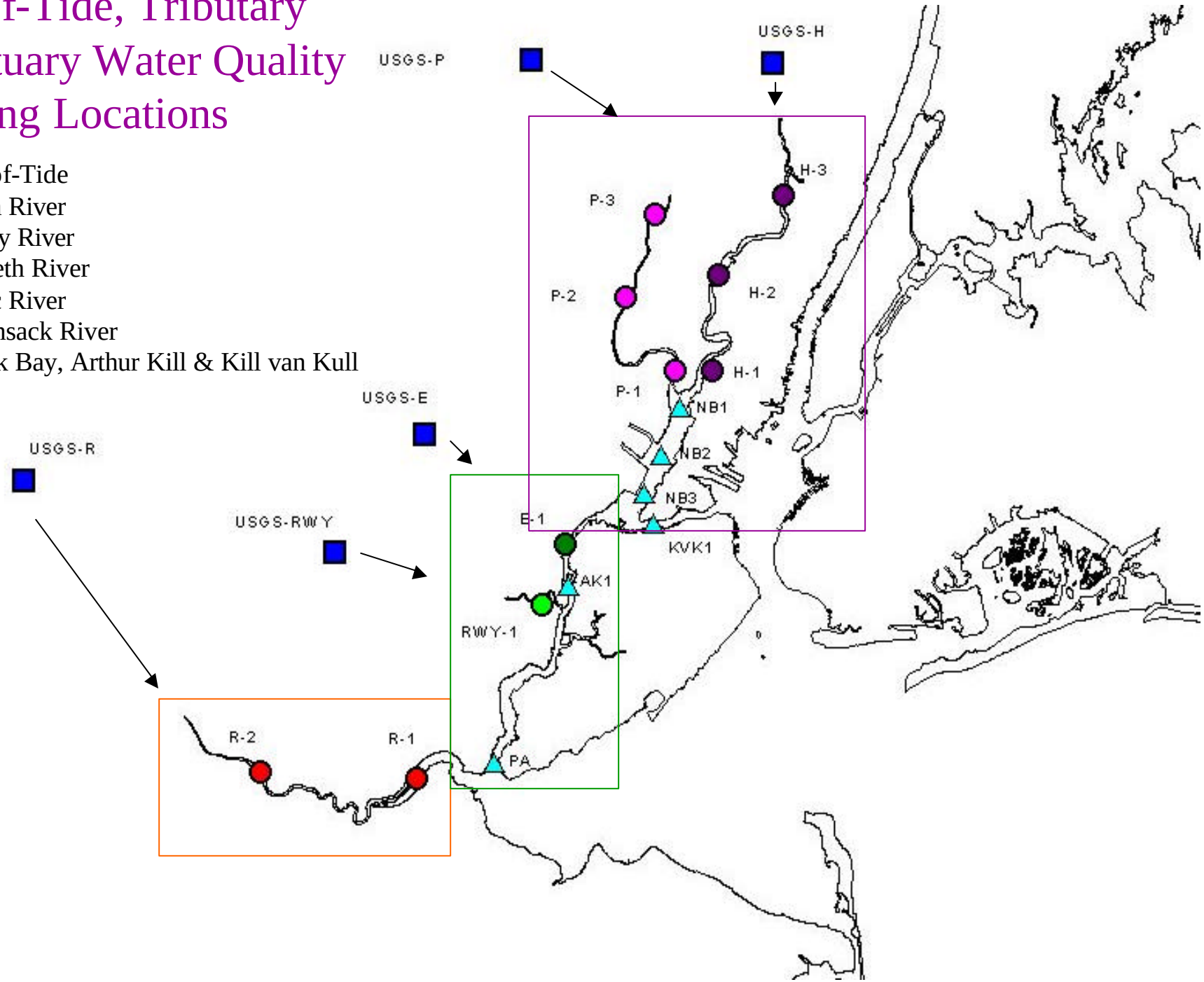
NJTRWP PHASE I AMBIENT SAMPLING METHODS

- Synoptic water quality samples and hydrodynamic surveys
- Dry and wet weather events
- Sample during outgoing tides

- Grab Samples: Metals & PAHs (Dissolved)
- 4-Hour Composite/TOPS Samples
  - PAHs & Dioxins/Furans (Sediment)
  - PCBs & Pesticides (Dissolved & Sediment)

Head-of-Tide, Tributary and Estuary Water Quality Sampling Locations

- Head-of-Tide
- Raritan River
- Rahway River
- Elizabeth River
- Passaic River
- Hackensack River
- Newark Bay, Arthur Kill & Kill van Kull

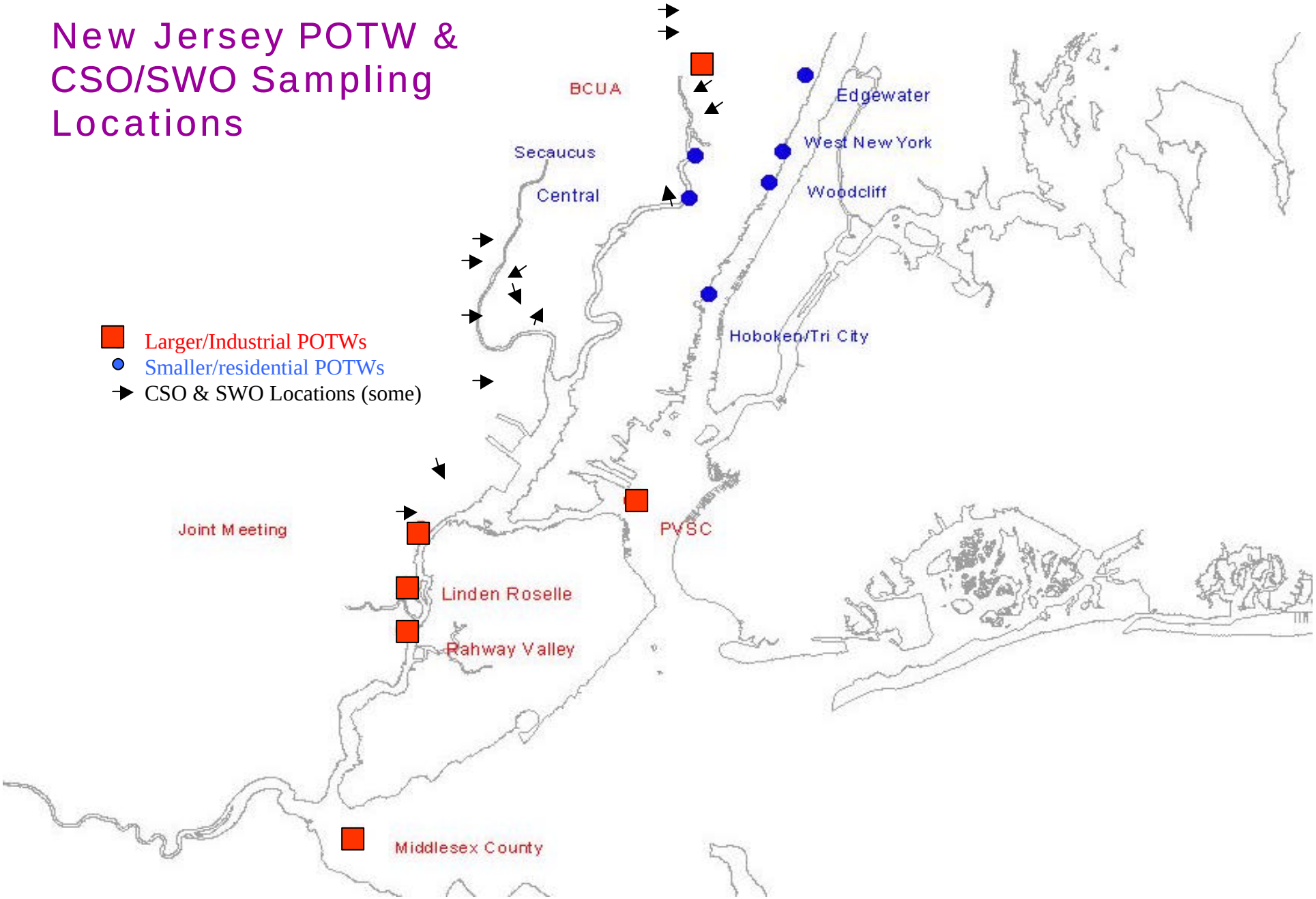



Elizabeth River
Head-of-Tide Sampling

Rahway River


Elizabeth River

New Jersey POTW & CSO/SWO Sampling Locations



NJTRWP PROJECT STATUS

- Sept 1999-June 2000: Method Development
- June 2000-Present: Phase I Studies
- August 2001: Newark Bay - Phase II Hydrodynamics Study
- Dec 2001: Phase IV Modeling Activities (Hydroqual)
- April 2002: Hackensack River - Phase II Metals Study

THE BIG "FUZZY" PICTURE

- State-of-the-Science sampling and analytical methods.
- Synoptic data collection and integration of hydrodynamics and water quality data.
- Comprehensive - entire estuary studied
- Has never been done before.